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Case report

Candida famata mediastinitis. A rare complication of open heart surgery. Case report and brief review

Alfredo Alonso Sanchez Betancourt[a,*], Pablo Sibaja Alvarez[b,c], Rolando Arguedas Camacho[d], Edward Guevara Espinoza[e,f]

[a] *Universidad San Judas Tadeo, San Jose, Costa Rica*
[b] *Surgical ICU, Hospital Mexico, Mexico*
[c] *Universidad San Judas Tadeo, Costa Rica*
[d] *Hospital Mexico, Mexico*
[e] *Hospital Mexico, Mexico*
[f] *Universidad San Judas Tadeo, Costa Rica*

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ABSTRACT

Candida mediastinitis is a rare complication of open heart surgery with high mortality and morbidity usually associated with *C. albicans*. We are reporting the case of a 57 year old male who after having a triple coronary artery bypass graft procedure, had mediastinitis caused by *Candida famata,* a yeast, that had only been reported once before as the causal agent of this condition. It is of vital importance, that future cases be reported, due to the fact that both reported cases have led to patient demise.

Introduction

Candida famata (*Candida flareri*) is a riboflavin overproducing [1], high osmotolerant yeast [2] that produce white to cream colored colonies on yeast extract peptone dextrose (YPD) medium (Fig. 1). This organism was considered to be a teleomorph of *Debaryomyces hansenii* [3] but was reclassified via rRNA gene intergenic spacer fingerprinting as a unique phylogenetic entity [4].

This organism is isolated from many sources, mainly related to food production. It has been detected in the teats of dairy cows [5], various types of cheese [6], prawns [7], feral pigeons [8], wild birds [9] and albino rats [10] among others (Fig. 2).

Infections by this agent are mainly observed in patients with depressed immune response, it has been identified as the cause of neonatal sepsis in a low weight preterm infant [11], oral thrush in patients with chronic kidney disease [12], peritonitis in patients with continuous ambulatory peritoneal dialysis [13], invasive infection in stem cell transplant patients [14], candidemia in pediatric cancer patients [15]. This pathogen has also been described as an atypical cause of vaginitis [16], onychomycosis of the hands and feet [17] and cholecystitis [18].

After an exhaustive literary review utilizing Pubmed and Ebscohost databases, we were able to find one previous report of mediastinitis by this agent [19].

We present the case of a 57 year old male who was diagnosed with *Candida famata* mediastinitis after having coronary artery bypass surgery.

Case report

A 57 year old male with a past medical history of type 2 diabetes, hypertension, a 90 pack year history of smoking and a previous inferior wall myocardial infarction treated with multiple vessel stent placement who was referred to our hospital after failing a dobutamine stress test. After admission an angiography was performed that showed a 90% obstruction of the distal third of the anterior and posterior descending artery as well as an 80–90% occlusion of the medial third of the right main coronary artery. A triple coronary artery bypass grafting (CABG) with saphenous vein graft was performed 29 days after admission, and a mediastinal drain was left in place. During the procedure it was noted that the patient's pericardium was inflamed therefore he was diagnosed with Dressler syndrome. The patient had multiple post op complications such as a documented cerebral infarction and a difficult airway 24 h post op.

An infected sternotomy site was noted on post op day #7. During status postop day #13 he went into septic shock that was

* Corresponding author.
E-mail address: drsanchez@usanjudas.ac.cr (A.A. Sanchez Betancourt).

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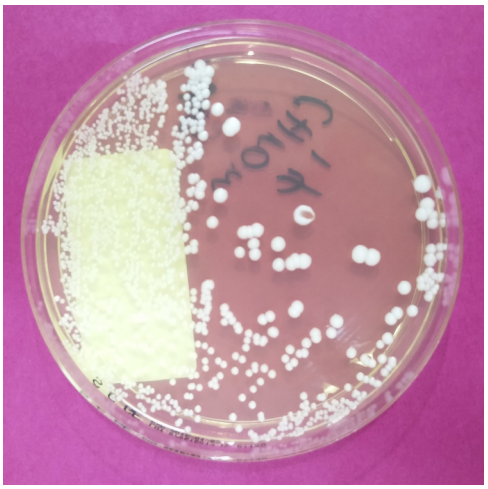


Fig. 1. *C. famata* growth on YPD medium.

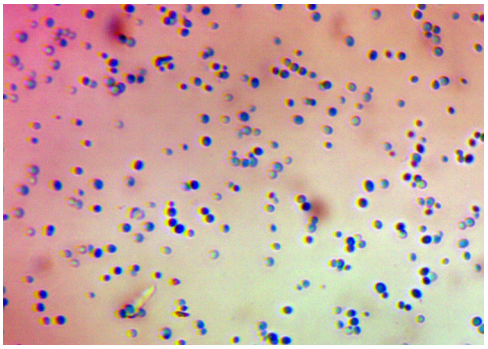


Fig. 2. *C. famata* observed under light microscopy at 40x via KOH staining.

further complicated by acute kidney injury. The patient received a course of vancomycin and piperacillin-tazobactam, which was later switched to imipenem. An obvious thickening of the mediastinum was observed in a chest X-ray and the diagnosis of post-surgical mediastinitis was made. The patient had multiple cultures and a chest computerized tomography (CT) was ordered. The CT revealed small amounts of fluid in the superior mediastinum, fat stranding (Figs. 3 and 4), as well as reactive inflammation of the precarinal and prevascular lymph nodes, therefore, surgical drainage via sternotomy was performed.

The patient grew two different species of fungi from different sources. *Candida parapsilosis* was identified in the patient's urine and central venous catheter, and *Candida famata* was retrieved from the mediastinal drain and the sternotomy wound. Antimicrobial sensitivity test was not performed. The patient was given amphotericin B for 2 days, and after the final cultures were obtained, a course of caspofungin was begun. Unfortunately, the patient had poor therapeutic response, went into multiorgan failure and expired on day 81 of his stay.

Discussion

Candida mediastinitis is a rare complication of open heart surgery [20] with high mortality and morbidity. We were able to identify one previous case report of mediastinitis by *C. famata*, that patient shared multiple similarities with our patient: coronary artery bypass grafting, a prolonged hospital stay and a fatal outcome to the infection.

There are multiple chemotherapeutic agents that can be utilized to treat *C. famata* infections. In vitro studies have shown that many agents are active against this yeast. The echinocandin anidulafungin [21] flucytosine, amphotericin B, caspofungin [22] and posaconazole [23] show the greatest antimicrobial activity. Resistance to fluconazole [24,25] make it a poor choice as first line treatment. The underlying condition and the source of contamination play an important role in the natural progression of the infection. In the case of mediastinitis, surgical drainage and wound debridement are critical components to managing this condition [20].

Due to the rarity of this particular surgical complication, we yet don't have a clear understanding as to whether or not this species of *Candida* requires a different therapeutic approach than the more common *C. albicans.* Hopefully in the future, we will have a clearer picture as to what measures will help reduce mortality in these patients.

Author participation statement

The roles of the authors involved in the elaboration of this paper are as follows:

Dr. Alfredo Sanchez Betancourt: wrote the article, took part in the literary review, and took part in obtaining and processing the information necessary for the writing process.

Dr. Pablo Sibaja Alvarez: was the main reviewer of the manuscript, also helped procure some of the information related to the publication.

Dr. Rolando Arguedas Camacho: took part in editing and review of the manuscript.

Dr. Edward Guevara Espinoza: took part in editing and review of the manuscript.

fig.3

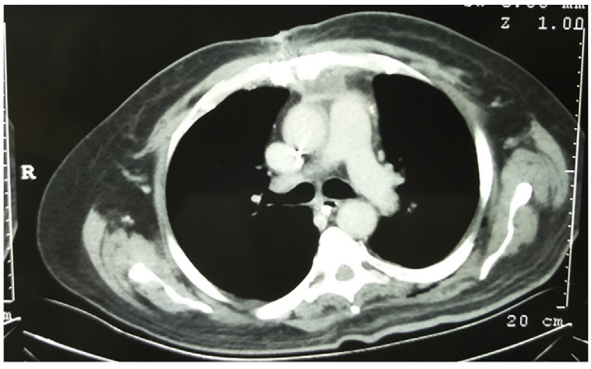
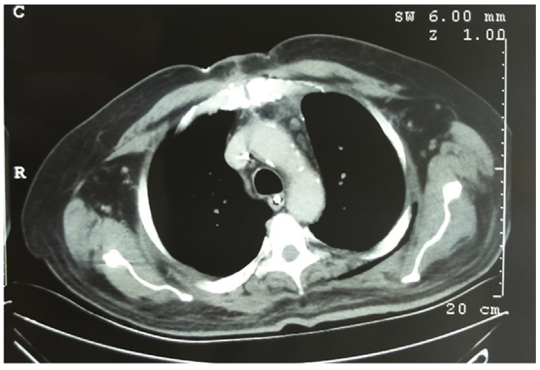


fig.4



Figs. 3 and 4. Fluid level observed on chest CT with thickening of the anterior portion of the superior mediastinum.

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